

application, while creams and lotions are those compositions that include an emulsion base only. Topically administered medications may contain a penetration enhancer to facilitate adsorption of the active ingredients through the skin. Suitable penetration enhancers include glycerin, alcohols, alkyl methyl sulfoxides, pyrrolidones and luarocapram. Possible bases for compositions for topical application include polyethylene glycol, lanolin, cold cream and petrolatum as well as any other suitable absorption, emulsion or water-soluble ointment base. Topical preparations may also include emulsifiers, gelling agents, and antimicrobial preservatives as necessary to preserve the active ingredient and provide for a homogenous mixture.

Transdermal administration of the present invention may comprise the use of a "patch" For example, the patch may supply one or more active substances at a predetermined rate and in a continuous manner over a fixed period of time.

Another preferred method of administering pharmacologically active compositions of active compound is as an aerosol. Aerosol compositions may be especially useful for the treatment of living tissue, although they could also be used for dermal applications. The term aerosol refers to a colloidal system of finely divided solid of liquid particles dispersed in a liquefied or pressurized gas propellant. The typical aerosol of the present invention for oral or nasal inhalation will consist of a suspension of active ingredients in liquid propellant or a mixture of liquid propellant and a suitable solvent. Suitable propellants include hydrocarbons and hydrocarbon ethers. Suitable containers will vary according to the pressure requirements of the propellant. Administration of the aerosol will vary according to patient age, weight and the severity and response of the symptoms.

For oral administration the active compound of the present invention may be incorporated with excipients and used in the form of non-ingestible mouthwashes and dentifrices. A mouthwash may be prepared incorporating the active compound in the required amount in an appropriate solvent, such as a sodium borate solution (Dobell's Solution). Alternatively, the active complex may be incorporated into an antiseptic wash

containing sodium borate, glycerin and potassium bicarbonate. The active compound may also be dispersed in dentifrices, including: gels, pastes, powders and slurries. The active compound may be added in a therapeutically effective amount to a paste dentifrice that may include water, binders, abrasives, flavoring agents, foaming agents, and humectants.

## V. Combined Therapy

In another embodiment, it is envisioned to use a candidate active compound in combination with other anti-diabetic or anti-obesity agents. These agents may include traditional agents, however, it may also include nontraditional compounds. Examples of traditional anti-diabetic agents include, but are not limited to, buformin, metformin, phenformin, insulin, acetohexamide, 1-butyl-3-mtanilylrea, carbutamide, chlorpropamid, glibornuride, gliclazide, flimeperidie, glipzide, gliquidone, glisoxepid, glyburide, glybuthiazol, glybuzole, glyhexamide, glymidine, glypinamid, phenbutamide, tolazamide, tolbutamide, tolcyclamide, pioglitazone, troglitazone, acarbose, calcium mesoxalate, miglitol or repaglinide. Non-traditional agents may include other saponins that in combination with an active compound exhibits a pharmacological response.

Combinations may be achieved by contacting cells with a single composition or pharmacological formulation that includes both agents (the active compound and anti-diabetic or anti-obesity agent), or by contacting the cell with two distinct compositions or formulations, at the same time. Alternatively, administration of one agent may precede or follow the treatment with a second agent by intervals ranging from minutes to weeks. In some situations, it may be desirable to extend the time period for treatment significantly, however, where several days (2, 3, 4, 5, 6 or 7) to several weeks (1, 2, 3, 4, 5, 6, 7 or 8) lapse between the respective administrations.

It also is conceivable that more than one administration of either an active compound or the other anti-diabetic agent will be desired. Various combinations may be

employed, where the active compound is "A" and the other agent or anti-diabetic is "B", as exemplified below:

A/B/A B/A/B B/B/A A/A/B B/A/A A/B/B B/B/B/A B/B/A/B

A/A/B/B A/B/A/B A/B/B/A B/B/A/A B/A/B/A B/A/A/B B/B/B/A

5 A/A/A/B B/A/A/A A/B/A/A A/A/B/A A/B/B/B B/A/B/B B/B/A/B

Other combinations are contemplated as well.

## VI. EXAMPLES

10 The following examples are included to demonstrate preferred embodiments of the invention. It should be appreciated by those of skill in the art that the techniques disclosed in the examples which follow represent techniques discovered by the inventor to function well in the practice of the invention, and thus can be considered to constitute preferred modes for its practice. However, those of skill in the art should, in light of the present disclosure, appreciate that many changes can be made in the specific embodiments which are disclosed and still obtain a like or similar result without  
15 departing from the spirit and scope of the invention.

### EXAMPLE 1

#### ***PANAX GINSENG AND PANAX QUINQUEFOLIUS GINSENOSIDE ANALYSIS***

*Panax ginseng* berry organic solvent extract was obtained from Jian Pharmaceutical Company, China. The constituents of the extract were analyzed using  
20 high performance liquid chromatography (HPLC). The high pressure gradient HPLC system was manufactured by Shimadzu Corp. (Kyoto, Japan). Chromatography was performed on a Phenomenex, Prodigy C18 5  $\mu$ m 150 x 3.2 mm analytical column protected by guard column Phenomenex C8 30 x 3.2 mm. The dried powder (20 mg) was dissolved in 1,000  $\mu$ l 90% MeOH, and 20  $\mu$ l of solution was injected into the system.  
25 Separations were obtained by linear gradient elution, using eluents A (water) and B